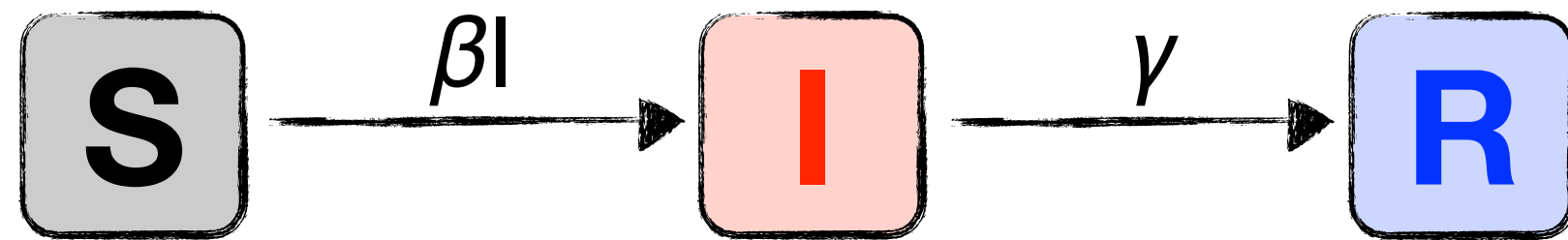


The fundamental model of disease transmission: the SIR model

We can't solve these equations by hand, so we use computer simulations:



How many people do we expect an **infectious** person to infect?

They'll infect β people per unit of time, until they recover – which happens at rate γ .

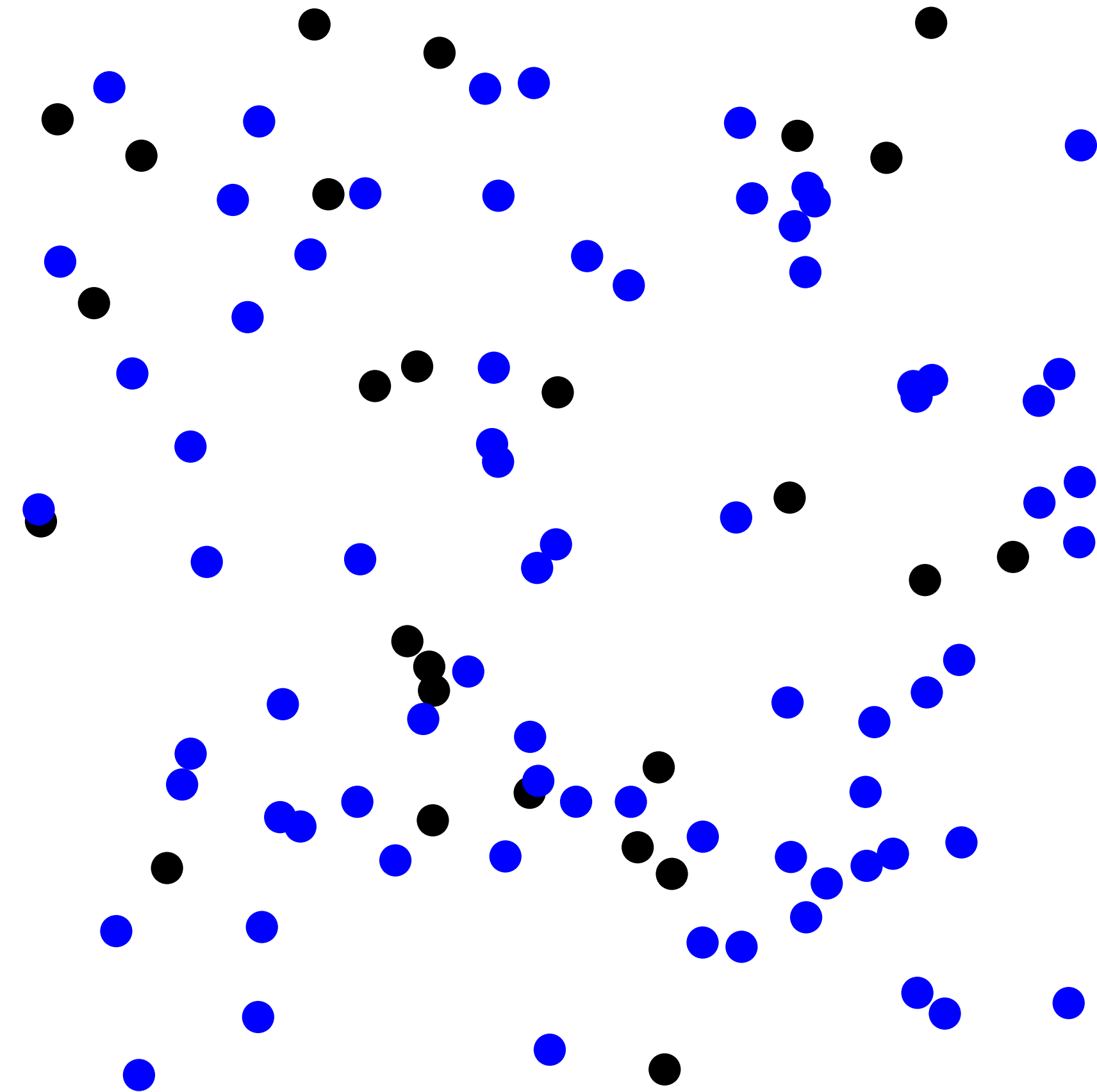
So, over the entire course of their infection, we expect them to infect β/γ people.

This is the **basic reproduction number (R_0)**: the expected number of people that an infectious person will infect in a totally susceptible population.

Let's imagine a disease where a person infects one person per week ($\beta = 1$) and it takes two weeks to recover ($\gamma = 1/2$).

The reproduction number is then

$$R_0 = \beta/\gamma = 1/(1/2) = 2$$



The fundamental model of disease transmission: the SIR model

We can't solve these equations by hand, so we use computer simulations:

